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09/520,257	03/07/2000	Mark R. Bilak	BUR990238US1	1284

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EXAMINER

DAY, HERNG DER

ART UNIT PAPER NUMBER

2123

DATE MAILED: 09/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

3

# Office Action Summary

Application No.

09/520,257

Applicant(s)

BILAK ET AL.

Examiner

Herng-der Day

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 March 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

Art Unit: 2123

### DETAILED ACTION

1. Claims 1-27 have been examined and claims 1-27 have been rejected.

#### *Priority*

2. Applicants' intention to claim for domestic priority under 35 U.S.C. 119(e) is acknowledged. The provisional application number is 60/172,198, filed December 17, 1999. However, it is noted that the inventors are not identical as shown in the provisional application. Please clarify the issue of inventorship.

#### *Oath/Declaration*

3. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §602.01 and §602.02.

The oath or declaration is defective because it claims the benefit under Title 35, United States Code, §120 of a United States application. A United States provisional application should claim the benefit under Title 35, United States Code, §119(e).

#### *Drawings*

4. The drawings are objected to for the following reasons. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the

Art Unit: 2123

description, are required in reply to the Office action to avoid abandonment of the application.

The objection to the drawings will not be held in abeyance.

4-1. The Draftsperson has objected to the drawings; see the copy of Form PTO 948 for an explanation.

4-2. Figures 5 and 8 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

4-3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

(a) step 56, in Figure 4.

(b) step 100, in Figure 7.

### ***Specification***

5. The spacing of the lines of the specification is such as to make reading and entry of amendments difficult. New application papers with lines double spaced on good quality paper are required.

### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1-27 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the

Art Unit: 2123

art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

There is a substantial lack of teachings for the claimed invention. For example, as described in lines 19-20 of page 5 in the specification, "One guardband value is determined by combining the individual values and then adding hot-e input based on performance sort". However, how to "combine the individual values and then add hot-e input based on performance sort" has not been described in the specification. As another example, there is no description of a Monte Carlo and how it is used. Therefore, without undue experiment, it is difficult for one skilled in the art to make and/or use the invention.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 2-4, 6, 12-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9-1. Claim 2 recites the limitation "the system on which the product is used" in line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim.

9-2. Claim 3 recites the limitation "the system to tester offset" in line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim.

9-3. Claim 4 recites the limitation "the test system" in line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim.

9-4. Claim 6 recites the limitation "the product specification" in line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Art Unit: 2123

9-5. Claim 12 recites the limitation “the new variables” in line 9 of the claim. There is insufficient antecedent basis for this limitation in the claim. Also note, the limitation of “the same steps” in line 9 of the claim is vague and indefinite because it is unclear whether the last step of “changing the initial system variables and ...” is included.

9-6. Claim 13 recites the limitation “the sample size” in line 5 of the claim. There is insufficient antecedent basis for this limitation in the claim.

9-7. Claim 16 recites the limitation “calculating tester to system mean and sigma” in line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim.

9-8. Claim 20 recites the limitation “the tester and the product under test” in lines 4-5 of the claim. There is insufficient antecedent basis for this limitation in the claim. Claim 20 also recites the limitation “said specification” in lines 5-6, 8, and 9 of the claim. There is insufficient antecedent basis for this limitation in the claim.

9-9. Claims not specifically rejected above are rejected as being dependent on a rejected claim.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-4, 6-7, 10, 20-24, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Mittle et al., U.S. Patent 5,634,001 issued May 27, 1997.

Art Unit: 2123

**11-1.** Regarding claim 1, Mittle et al. disclose a method for determining a specification guardband comprising the steps of:

creating a set of distribution models representative of variables that affect said specification (histograms, column 6, lines 1-6);

analyzing the set of models with a statistical tool that can work with the distribution models (difference between times, column 6, lines 24-31); and

selecting a guardband for said specification based on the statistical analysis and a tolerance target for the said specification under analysis (determine the appropriate guard-band, column 6, lines 45-60).

**11-2.** Regarding claim 2, Mittle et al. further disclose one of the variables is a system on which the product is used (the system environment factors, column 5, lines 14-16).

**11-3.** Regarding claim 3, Mittle et al. further disclose one of the variables is a system to tester offset (the difference, column 5, lines 57-63).

**11-4.** Regarding claim 4, Mittle et al. further disclose one of the variables is a test system which the guardband is used (timing measurements due to hot-electron effects, column 5, lines 37-44).

**11-5.** Regarding claim 6, Mittle et al. further disclose the specification is maximum frequency (minimum value of  $t_{cycle}$ , column 3, lines 56-62; maximum frequency is the inverse of minimum  $t_{cycle}$ ).

**11-6.** Regarding claim 7, Mittle et al. further disclose a sample chosen for creating the models is at least 10 (the number of circuit paths in a microprocessor, column 6, lines 3-6; is at least 10).

Art Unit: 2123

**11-7.** Regarding claim 10, Mittle et al. further disclose one of the set of models is a reliability wearout model (hot-electron reliability tool is used, column 5, lines 37-44).

**11-8.** Regarding claims 20-24, these program storage device claims include equivalent method limitations as in claims 1-4 and 10 and are anticipated using the same analysis of claims 1-4 and 10.

**11-9.** Regarding claim 27, Mittle et al. further disclose a computer configured for determining a tester guardband, the computer comprising:

an application interface for inputting various environmental models into the computer the models comprising a tester model and system model (histograms, column 6, lines 1-6);

a memory that contains a statistical program capable of doing statistical distribution analysis (software program, column 5, lines, 63-67);

an application interface for inputting tolerance data (FIG. 5);

an execution unit that receives the statistical program and environmental models and processes the guardbands based on the tolerance data (determine the appropriate guard-band, column 6, lines 45-60); and

an I/O device for outputting the guardband data (guard band output files 44, FIG. 3).

**12.** Claims 1-4, 6-9, 20-23, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Comard et al., "Calculating Error of Measurement on High Speed Microprocessor Test", Proceedings of International Test Conference, October 1994, pages 793-801.

**12-1.** Regarding claim 1, Comard et al. disclose a method for determining a specification guardband comprising the steps of:



Art Unit: 2123

creating a set of distribution models representative of variables that affect said specification (Figures 2 and 3, page 794);

analyzing the set of models with a statistical tool that can work with the distribution models (analysis of means, page 794, column 2 through page 798, column 2); and

selecting a guardband for said specification based on the statistical analysis and a tolerance target for the said specification under analysis (Table 1 and 2, page 798).

**12-2.** Regarding claim 2, Comard et al. further disclose one of the variables is a system on which a product is used (test loadboard, page 794, Figure 1).

**12-3.** Regarding claim 3, Comard et al. further disclose one of the variables is a system to tester offset (test method, page 794, Figure 1).

**12-4.** Regarding claim 4, Comard et al. further disclose one of the variables is a test system which the guardband is used (tester, page 794, Figure 1).

**12-5.** Regarding claim 6, Comard et al. further disclose the specification is maximum frequency (Table 1 and 2, page 798; guard band displayed as % target value).

**12-6.** Regarding claim 7, Comard et al. further disclose a sample chosen for creating the models is at least 10 (400 total trials, page 794, column 1).

**12-7.** Regarding claim 8, Comard et al. further disclose the tolerance target is a quality target (Scrap Risk, page 798, Table 1).

**12-8.** Regarding claim 9, Comard et al. further disclose the tolerance target is a revenue target (Down Bin Risk, page 798, Table 2).

**12-9.** Regarding claims 20-23, these program storage device claims include equivalent method limitations as in claims 1-4 and are anticipated using the same analysis of claims 1-4.

Art Unit: 2123

**12-10.** Regarding claim 27, Comard et al. further disclose a computer configured for determining a tester guardband, the computer comprising:

an application interface for inputting various environmental models into the computer the models comprising a tester model and system model (page 794, Figure 1);

a memory that contains a statistical program capable of doing statistical distribution analysis (analysis of means, page 794, column 2 through page 798, column 2);

an application interface for inputting tolerance data (Consumer's Risk, page 797, Figure 9);

an execution unit that receives the statistical program and environmental models and processes the guardbands based on the tolerance data (Table 1 and 2, page 798); and

an I/O device for outputting the guardband data (Draft Final Report, page 794, column 1).

### ***Claim Rejections - 35 USC § 103***

**13.** The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**14.** Claims 5 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mittle et al., U.S. Patent 5,634,001 issued May 27, 1997, as applied to claims 1 and 20, and further in view of Applicants' assertions.

**14-1.** Regarding claim 5, Mittle et al. fail to expressly disclose the statistical tool uses a Monte Carlo analysis.

However, Applicants assert, as described in line 29 of page 5 in the specification, “any statistical software program can be used with the invention”. It is well known that Monte Carlo method is a technique, which obtains a probabilistic approximation to the solution of a problem by using statistical sampling techniques and most statistical software programs include Monte Carlo analysis.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Mittle et al. to incorporate the Monte Carlo analysis of a statistical software program asserted by the Applicants to obtain the invention as specified in claim 5 because a probabilistic approximation to the solution of a problem can be easily obtained by using Monte Carlo analysis.

**14-2.** Claim 25 is a program storage device claim including equivalent method limitations as in claim 5 and is unpatentable using the same analysis of claim 5.

**15.** Claims 11 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mittle et al., U.S. Patent 5,634,001 issued May 27, 1997, as applied to claims 1 and 20, and further in view of Kreyszig, “Advanced Engineering Mathematics”, John Wiley & Sons, 1988, pages 1248-1253.

**15-1.** Regarding claim 11, Mittle et al. fail to expressly disclose student-t and chi-squared distribution models are used.

Kreyszig discloses student-t distribution is used for determination of a confidence interval for the mean of a normal distribution with unknown variance (table 24.6, page 1251) and chi-squared distribution is used for determination of a confidence interval for the variance of a normal distribution, whose mean need not be known (table 24.7, page 1252).

Art Unit: 2123

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Mittle et al. to incorporate the teachings of Kreyszig to obtain the invention as specified in claim 11 because student-t and chi-squared distribution models are designed to determine a confidence interval for the mean and variance of a normal distribution.

**15-2.** Claim 26 is a program storage device claim including equivalent method limitations as in claim 11 and is unpatentable using the same analysis of claim 11.

**16.** Claims 5 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Comard et al., "Calculating Error of Measurement on High Speed Microprocessor Test", Proceedings of International Test Conference, October 1994, pages 793-801, as applied to claims 1 and 20, and further in view of Applicants' assertions.

**16-1.** Regarding claim 5, Comard et al. fail to expressly disclose the statistical tool uses a Monte Carlo analysis.

However, Applicants assert, as described in line 29 of page 5 in the specification, "any statistical software program can be used with the invention". It is well known that Monte Carlo method is a technique, which obtains a probabilistic approximation to the solution of a problem by using statistical sampling techniques and most statistical software programs include Monte Carlo analysis.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Comard et al. to incorporate the Monte Carlo analysis of a statistical software program asserted by the Applicants to obtain the invention as specified in

Art Unit: 2123

claim 5 because a probabilistic approximation to the solution of a problem can be easily obtained by using Monte Carlo analysis.

**16-2.** Claim 25 is a program storage device claim including equivalent method limitations as in claim 5 and is unpatentable using the same analysis of claim 5.

**17.** Claims 11 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Comard et al., "Calculating Error of Measurement on High Speed Microprocessor Test", Proceedings of International Test Conference, October 1994, pages 793-801, as applied to claims 1 and 20, and further in view of Kreyszig, "Advanced Engineering Mathematics", John Wiley & Sons, 1988, pages 1248-1253.

**17-1.** Regarding claim 11, Comard et al. fail to expressly disclose student-t and chi-squared distribution models are used.

Kreyszig discloses student-t distribution is used for determination of a confidence interval for the mean of a normal distribution with unknown variance (table 24.6, page 1251) and chi-squared distribution is used for determination of a confidence interval for the variance of a normal distribution, whose mean need not be known (table 24.7, page 1252).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Comard et al. to incorporate the teachings of Kreyszig to obtain the invention as specified in claim 11 because student-t and chi-squared distribution models are designed to determine a confidence interval for the mean and variance of a normal distribution.

**17-2.** Claim 26 is a program storage device claim including equivalent method limitations as in claim 11 and is unpatentable using the same analysis of claim 11.

***Allowable Subject Matter***

18. Dependent claims 12-19 are non-obvious over the prior art of record, and would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, first and second paragraph, set forth in this Office action and rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Reference to Shen et al., U.S. Patent 6,226,741 issued May 1, 2001, is cited as disclosing booting up a system using different frequency clock.

Reference to Singhal et al., U.S. Patent 6,356,861 issued March 12, 2002, and filed April 12, 1999, is cited as disclosing a statistical device model for the production process is derived directly from the worst-case files.

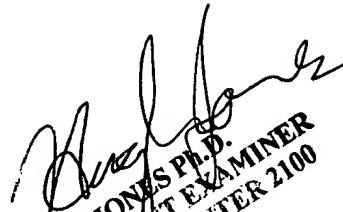
20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Herng-der Day whose telephone number is (703) 305-5269. The examiner can normally be reached on 8:30 - 17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin J Teska can be reached on (703) 305-9704. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Art Unit: 2123

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Herng-der Day  
September 7, 2003

  
HUGH JONES Ph.D.  
PRIMARY PATENT EXAMINER  
TECHNOLOGY CENTER 2100